AP Biology, Semester 2
Unit Quiz: Animal Structure, Reproduction and Development
Instructor Version

Section I: Multiple-Choice Questions

Answer Sheet

1.	D
2.	B
3.	E
4.	C
5.	A
6.	C
7.	D
8.	B
9.	A
10.	D

11.	B
12.	D
13.	E
14.	A
15.	D
16.	A
17.	C
18.	E
19.	C
20.	D

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Unit Quiz: Animal Structure, Reproduction and Development
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Full Name_____ **User Name** _____ **Date:** _____
(print clearly)

Section II: Free-Response Questions

Time Limit: You have 30 minutes to complete this section. Both questions are weighted equally, so allow around 15 minutes for each question. You may move back and forth between questions until time is called.

Scoring: 20 points each, 40 points total

Directions: Answer each of the questions in essay form. Outline form is not acceptable. Labeled diagrams may be used to supplement your answer, but a diagram alone is insufficient. Read each question carefully before you begin to write your answer.

1. **Discuss how loose connective tissue, cartilage, and blood all demonstrate the basic structure of connective tissue. How is each one's structure related to its function in connective tissue?**

   ANSWER:
   Connective tissue consists of cells embedded in an extracellular matrix. This matrix may be very fluid, as in the case of blood plasma in which the different types of blood cells are suspended. Alternatively, it may be very rigid, as in the case of bone or cartilage, consists of a mass of collagen fibers in a solid matrix. The extracellular matrix of loose connective tissue is fibrous, consisting of elastic protein or collagen fibers.

   The more rigid the connective tissue, the greater the number of collagen or elastic protein fibers present. In the case of bone, the rigidity is provided by a matrix of collagen supplemented by mineral deposits. Unlike plant cells, animal cells lack rigidity. The role of the matrix is to add the 'scaffolding' necessaryfor the strength and flexibility provided by tissues as varied as skin and bone.

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2. **The embryonic membranes of vertebrates are adapted to perform specific functions. Illustrate this statement with examples of membrane function in birds and mammals.**

ANSWER:
The four vertebrate embryonic membranes are the chorion, amnion, yolk sac, and allantois. They all perform separate functions. The chorion provides shock absorbing protection, the amnion prevents the embryo from drying out, the yolk sac holds the food supply (in reptiles and birds), and the allantois holds the embryo's waste products (again, in reptiles and birds).

Birds lay eggs that develop outside of the body. The eggs are protected by an external shell, but inside the shell the embryo has to develop as an isolated entity. The embryonic membranes are therefore of crucial importance in providing both protection and nutrition for the embryo.

Mammal embryos develop in the protected environment of the mother's uterus, and so the functions of the embryonic membranes have evolved into roles that complement the uterine environment. The yolk sac is a site of early blood cell production in the mammal;it doesn't have a nutritive role. The human allantois is incorporated into the umbilical cord, helping take waste products away from the fetus into the mother's circulatory system. The chorion and amnion still perform a protective function in the mammal, however.

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